

REMARKS & ARGUMENTS

The Applicant provides the following remarks and argument for consideration in further examination of the present application and explanation of the amendments presented herein. Reconsideration of the rejection of the pending claims in view of these remarks and argument is requested.

Claim Amendments

Claims 26-50 are amended at the examiner's suggestion to change "computer program product" to "computer readable medium" to avoid any concern that the claims as drafted were not directed to statutory subject matter. This amendment is merely one of form over substance as it is Applicants' position that the original claim language means exactly the same the amended claim language.

Claim Rejections – 35 U.S.C. § 101

The Examiner has rejected claims 1-50 in the Office action pursuant to 35 U.S.C. § 101 asserting that the claimed invention is directed to non-statutory subject matter. The Office asserts that the claims are directed to "the mere manipulation of data or an abstract idea, or merely solve a problem without a limitation to a practical result." (Office Action, 2 October 2007, p. 2.) In particular, the examiner posits that "merely sampl[ing] pixels in a first region, sampl[ing] pixels in a second region and edit[ing] based upon first and second distributions ... do[es] not provide any result from the editing" and that "a practical application does not exist in the claims." (Id. at p. 2.) The Examiner suggests that there should be one or more subsequent steps in order for the claims to recite patentable subject matter. For example, the examiner offers that the inclusion of elements representing a physical object or activity transformed outside the computer, or a pre or post processing activity, or a recitation of a practical application would produce a useful, tangible, and concrete result. (Id.) Applicant disagrees and asserts that the claims as presented herein are directed to statutory subject matter and fully meet the requirements of § 101.

It appears, pursuant to the analysis of the Office supporting the rejection as summarized above, that all of the steps of the *Guidelines for Examination of Patent Applications for Subject Matter Eligibility* (22 November 2005) (the "Guidelines"; now collected at M.P.E.P. §2106) were not addressed in examining the present application and claims. In particular, the Guidelines

instruct the Office to follow the following procedure when making a determination of subject matter eligibility under § 101.

- IV(A) Consider the breadth of 35 U.S.C. § 101 under controlling law;
- IV(B) Determine whether claimed invention falls within category enumerated in § 101;
- IV(C) Determine whether the claimed invention falls within a judicial exception to §101;
 - 1) Determine whether the claimed invention covers a judicial exception to §101 or a practical application of a judicial exception to §101;
 - 2) Determine whether the claimed invention is a practical application of a judicial exception to §101;
 - i) Determine whether there is a physical transformation of matter; or
 - ii) Determine whether a useful, tangible, and concrete result is produced;
 - 3) Determine whether the claimed invention preempts public use of a natural phenomenon; and

IV(D) Establish on the record a prima facie case of subject matter ineligibility. MPEP §2106. It is apparent that such a procedure was not completely followed as there is no analysis of any of these steps other than 2(b) on the record. Presumably step IV(D) would be considered addressed, although not overtly, in view of the rejection issued.

Applicants presume in the absence of argument to the contrary in the Office action that claims 1-50 meet the remaining subject matter eligibility requirements of MPEP §2106. However, the Applicant takes this opportunity to clarify how each of procedures in the guidelines is fulfilled by the claims.

1) The breadth of controlling law under § 101.

Applicant discusses the controlling law in greater detail below, primarily with respect to M.P.E.P. § 2106 (IV)(C). In view of this discussion, it becomes apparent that the Examiner has not considered the full breadth of the controlling law or the rejection of claims 1-50 on § 101 grounds would not have been made as there is no support for them in the law. In particular, under controlling law, there is no requirement that a process claim present or recite a specific result or “post solution activity.” It is enough that the claimed process itself is novel and not obvious.

2) The claimed invention falls within the category enumerated in § 101.

The four enumerated categories of patentable subject matter set forth in 35 U.S.C. § 101 are process, machine, manufacture, and composition of matter. Claims 1-25 are clearly directed to processes (i.e., methods for use in computer systems are claimed). Claims 26-50 are directed to a manufacture, particularly a computer readable medium, which is explicitly acknowledged as falling within the enumerated categories under the Guidelines as functional descriptive material, i.e., a computer program that “impart[s] functionality when employed as a computer component.” (See, *In re Beauregard*, 53 F.3d 1583 (Fed. Cir. 1995) (“The Commissioner now states ‘that computer programs embodied in a tangible medium, such as floppy diskettes, are patentable subject matter under 35 U.S.C. § 101 and must be examined under 35 U.S.C. § 102 and 103.’ Emphasis added.)) Thus, Applicant submits that the claims meet the first ground of eligibility under the Guidelines.

3) The claimed invention does not fall within a judicial exception to § 101.

“Excluded from patent protection are laws of nature, natural phenomena, and abstract ideas.” *Diamond v. Diehr*, 450 U.S. 175, 185 (1981). Recognizing this judicial pronouncement, the Guidelines instruct the Office to determine whether a claimed invention falls within these exclusions. The claims of the present application do not encompass a law of nature or natural phenomena as the claims are generally directed to effecting a result within a computer operation or system. Abstract ideas have been defined in the Guidelines to include mathematical algorithms. Certain steps of computer programs or manual implementations often involve calculations based upon mathematical algorithms or logical constructs that may be considered algorithmic. However, methods and products employing abstract ideas . . . to perform a real-world function may well be” patentable subject matter. M.P.E.P. § 2106(IV)(C).

In the present invention, independent claims 1 and 26 and the claims depending therefrom each involve similar process steps that, while in part performing calculations on a computer system, also perform real-world functions. In particular, claim 1 is directed to a method that causes a computer to sample and edit pixels in a digital image. Claim 26 is directed to a computer readable media that cause a computer to sample and edit pixels in a digital image. Applicant submits that sampling and editing pixels in a digital image as variously claimed are real-world functions. Thus, Applicant asserts that the claims are directed to patentable subject matter and do not fall within any of the recognized judicial exceptions to the categories of § 101.

- a) The claimed invention covers a practical application of a judicial exception to § 101.

The Guidelines provide that while an abstract idea per se does not constitute patentable subject matter, a claimed invention does meet the § 101 subject matter requirements when the abstract idea “has been reduced to some practical application rendering it ‘useful.’” *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1356-57 (Fed. Cir. 1999). The Court further states in *AT&T*, “that any step-by-step process, be it electronic, chemical, or mechanical, involves an “algorithm” in the broad sense of the term. *See State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1374-75, 47 USPQ2d 1596, 1602 (Fed. Cir. 1998), *cert. denied*, 119 S. Ct. 851 (1999). Because Section 101 includes processes as a category of patentable subject matter, the judicially-defined proscription against patenting of a “mathematical algorithm,” to the extent such a proscription still exists, is narrowly limited to mathematical algorithms in the abstract.” *AT&T*, 172 F.3d at 1356, emphasis added.¹

In this instance, the invention as claimed utilizes sampling of regions of a digital image to edit the digital image. Applicant cannot surmise how the editing of a digital image can be anything but a practical application of algorithmic data manipulation.

- b) The claimed invention is a practical application of an abstract idea.

The Guidelines instruct patent examiners that a “practical application” of an abstract idea, law of nature, or natural phenomenon is patentable subject matter within the meaning of § 101 “if the claimed invention physically transforms an article or physical object to a different state or thing, *or* if the claimed invention otherwise produces a useful, concrete, and tangible result.” M.P.E.P. § 2106(IV)(C)(1). It should be clearly understood that either physical transformation or the production of a useful, concrete, and tangible result meet the requirement for patentability. (*See, e.g., AT&T*, 172 F.3d at 1358) (Physical transformation “is not an invariable requirement, but merely one example of how a mathematical algorithm may bring about a useful application.” Emphasis added.) In the present application, however, the claims plainly pass the § 101 threshold under both of the independently sufficient parts of this test.

¹ Applicant notes that *State Street* and *AT&T* are the most recent, primary, and controlling pronouncements by the Court of Appeals for the Federal Circuit regarding the scope of patentable subject matter under 35 U.S.C. § 101. While issues regarding Section 101 were recently appealed to the Supreme Court in *Laboratory Corp. of America (LabCorp) v. Metabolite Laboratories, Inc.* (Supreme Court 2005), certiorari was dismissed as improvidently granted (126 S. Ct. 2921 (2006)) and the issued was not raised upon. The Section 101 issues were not raised before the trial court or the Federal Circuit. *Metabolite Laboratories, Inc. et al. v. Laboratory Corp. of America (LabCorp)*, 03-1120 (Fed. Cir. June 8, 2004).

i) The claimed invention involves a physical transformation.

The claimed invention results in the editing of pixels in a digital image. By editing a pixel, it is axiomatic that a property of the pixel is changed in some way. A pixel is the smallest single component of a digital image and provides a visually perceptible rendering of some data or information to a user. Through the editing operation the claimed processes (claims 1-25), or a computer readable medium embodying processes (claims 26-50), transform the digital image to a different state, which implicitly results in a changed or different visible presentation of the data to and perception by the user. In terms of the representation of a digital image in a display device, the output of a CRT, LCD, plasma, or other screen technology will change due to the editing operation. Thus, the claimed invention is a novel process. The outcome of this novel process is a physical transformation.

ii) The practical application in the claimed invention produces a useful, tangible, and concrete result.

Although abstract ideas are not patentable subject matter when they are presented as “merely . . . constituting disembodied concepts or truths that are not ‘useful,’” when abstract ideas are incorporated in a claimed invention as part of a process that produces a “useful, concrete, and tangible result,” the invention satisfies § 101. *State Street*, 149 F.3d at 1373-75 (Fed. Cir. 1998). The “result” produced in the claims of the present application is an edited digital image, a result that plainly meets the *State Street* factors.

A) The claimed process and medium produce a useful result.

The results produced by the inventive methods, systems, and manufactures set forth in the claims are clearly “useful.” The change in pixel properties of a digital image through an editing operation is immensely useful. Digital images are edited every day by other processes to change size, change colors, overlay graphic on top of pictures, create new images on a blank digital canvas, etc. The list goes on. Editing of digital images is useful for the production of print advertisements, magazines, newspapers, photographs, and this particular document produced by a word processing program. It is readily apparent that the editing of pixels produces useful results.

B) The claimed process and medium produce a tangible result.

The results produced under claims 1-50 are also “tangible,” which is defined as the opposite of “abstract.” M.P.E.P. § 2106(IV)(C)(2)(b)(2). For example, a “process claim must set

forth a practical application of that Sect. 101 judicial exception to produce a real-world result.”
Id. The Office action states that the claims do not provide any result from the editing. (Office Action, 2 October 2007, p. 3.) This statement is both factually and legally incorrect. First, from a factual standpoint, the editing operation is a practical application that has a tangible consequence, i.e., a change in a digital image.

In *Arrhythmia Research Technology Inc. v. Corazonix Corp.*, the Court in upholding the statutory eligibility of the claimed subject matter stated “In answering the question “What did the applicant invent?”, *Grams*, 888 F.2d at 839, 12 USPQ2d at 1827, the [claimed] method is properly viewed as a method of analyzing electrocardiograph signals in order to determine a specified heart activity. ... That the product is numerical is not a criterion of whether the claim is directed to statutory subject matter.” 958 F.2d 1053, 1059-60 (Fed. Cir. 1992). The claims at issue in *Arrhythmia*² are analogous to the claims of the present invention with respect to the tangibility of the result of the claimed process. Transforming input data in the form of electrocardiograph signals of a patient to determine a heart activity is no different than transforming data relating to pixel distributions to determine a pixel editing operation. Thus the claims of the present invention explicitly meet the tangible requirement of the Guidelines and the law.

Second, from a legal standpoint, uses of algorithms that do not even go so far as to minimally report a result of a calculation have been found to be entirely appropriate practical applications meeting the requirements of Section 101. Claims 1 and 26 of the present application are comparable to the representative claim 1 in *Arrhythmia*. The '459 patent of *Arrhythmia* merely compares two numbers, one a calculated (i.e., reported) result, the other predetermined. The determination of actual heart activity as a result is only derived from the claim implicitly. In particular, the result in the claim of *Arrhythmia*, i.e., “a number representing a signal related to the patient’s heart activity” was later characterized by the Court in *AT&T* as “a non-abstract output. ... The finding that the claimed process “transformed” data from one “form” to another

² Claim 1 of U.S. Patent No. 4,422,459 at issue in *Arrhythmia*, which was not rejected by the Office during prosecution as nonstatutory under Section 101, is as follows:

1. A method for analyzing electrocardiograph signals to determine the presence or absence of a predetermined level of high frequency energy in the late QRS signal, comprising the steps of: converting a series of QRS signals to time segments, each segment having a digital value equivalent to the analog value of said signals at said time; applying a portion of said time segments in reverse time order to high pass filter means; determining an arithmetic value of the amplitude of the output of said filter; and comparing said value with said predetermined level.

simply confirmed that Arrhythmia's method claims satisfied Section 101 because the mathematical algorithm included within the process was applied to produce a number which had specific meaning—a useful, concrete, tangible result—not a mathematical abstraction.” 172 F.3d at 1359.

Thus, even a mere numerical output of a process may be useful, concrete, and tangible because of its specific meaning. The same is true of the present invention as claimed. The editing of a pixel in the claimed processes (and further the claimed computer program products) is not a mere mathematical abstraction or manipulation of data; it has a specific meaning in the form of a change in or alteration of a digital image, which is equally as tangible as a representation of a heart condition or activity.

Similarly, in *State Street* the claims³ set forth a series of means for processing data regarding changes in value of an investment portfolio. The Court held “that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces “a useful, concrete and tangible result”—a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.” 149 F.3d 1368. Note again that there was no requirement for doing anything with the numerical results in any manner in *State Street*; it was enough to meet the statutory requirement of Section 101 that the numerical results were merely generated. The court implied the potential useful and tangible aspects of the results, e.g., for recording or reporting; such uses of the results were not presented explicitly in the claims.

³ Claim 1 of U.S. Patent No. 5,193,056 at issue in *State Street* is as follows:

1. A data processing system for managing a financial services configuration of a portfolio established as a partnership, each partner being one of a plurality of funds, comprising:
 - (a) computer processor means for processing data;
 - (b) storage means for storing data on a storage medium;
 - (c) first means for initializing the storage medium;
 - (d) second means for processing data regarding assets in the portfolio and each of the funds from a previous day and data regarding increases or decreases in each of the funds, [sic, funds] assets and for allocating the percentage share that each fund holds in the portfolio;
 - (e) third means for processing data regarding daily incremental income, expenses, and net realized gain or loss for the portfolio and for allocating such data among each fund;
 - (f) fourth means for processing data regarding daily net unrealized gain or loss for the portfolio and for allocating such data among each fund; and
 - (g) fifth means for processing data regarding aggregate year-end income, expenses, and capital gain or loss for the portfolio and each of the funds.

The claims of the present invention similarly constitute a practical application of an algorithm, i.e., the use of distribution data of pixel properties to inform the boundaries of an editing operation that implicitly provides a change in the digital image, a real world result. Thus the description of tangible results of the process and computer readable medium manufactures of the claims of the present application meet the requirements set forth in the legal standards of prior controlling cases. Further note that although the claims at issue in *State Street* were directed entirely to a system, the legal principals apply equally to the process and product claims of the present application. *AT&T*, 172 F.3d at 1357 (“[W]hether stated implicitly or explicitly, [the Court] consider[s] the scope of Section 101 to be the same regardless of the form—machine or process—in which the particular claim is drafted”).

In a further example, the claims at issue in *AT&T*⁴ were directed to a “process employ[ing] subscribers’ and call recipients’ PICs [primary interexchange carrier] as data, appl[y] Boolean algebra to those data to determine the value of the PIC indicator, and appl[y] that value through switching and recording mechanisms to create a signal useful for billing purposes.” 172 F.3d at 1358. In this case, the useful, tangible result, i.e., creating a signal for billing purposes, is not actually recited in the claim. This use was implied by the Court. A recitation of the result in the claims is thus not required by the law; the requirement is merely that the claimed invention actually produce or achieve such a result, not that the result be specifically set forth in the claim. To the extent that the Guidelines suggest a different requirement, the Guidelines do not comport to the state of controlling law nor do they have such binding effect. M.P.E.P. § 2106(I), ¶ 2. If the examiner does not recognize the editing operation of the claims to be a result in itself, the editing operation may alternatively be understood as implicitly creating a useful, tangible result, i.e., an alteration of a digital image. The result is thus not merely some abstract numerical calculation or mere data manipulation.

⁴ Claim 1 of U.S. Patent No. 5,333,184 at issue in *AT&T* is as follows:

1. A method for use in a telecommunications system in which interexchange calls initiated by each subscriber are automatically routed over the facilities of a particular one of a plurality of interexchange carriers associated with that subscriber, said method comprising the steps of:
generating a message record for an interexchange call between an originating subscriber and a terminating subscriber, and
including, in said message record, a primary interexchange carrier (PIC) indicator having a value which is a function of whether or not the interexchange carrier associated with said terminating subscriber is a predetermined one of said interexchange carriers.

C) The claims process and medium produce a concrete result.

Finally, the claims produce a “concrete” result. “Concrete” is defined as the opposite of “unrepeatable or unpredictable.” M.P.E.P. §2106(IV)(C)(2)(b)(3). By editing pixels based upon first and second distributions of pixel properties in a digital image, a predictable and repeatable result is achieved for identical distribution inputs with respect to a digital image. The invention as set forth in the various claims yields predictable, repeatable results in that based upon the pixel distributions, an edited pixel with characteristics based upon the distributions may always be determined as a result. Thus, the “result” produced in claims 1-50 of the present application meets the practical application requirements of the Guidelines.

3) The claimed invention does not preempt public use of an abstract idea.

A patent sweeps too broadly if it comprises every “substantial practical application” of a natural phenomenon, because it “in practical effect would be a patent on the [phenomenon] itself.” *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972). Applicant notes that the Office action did not assert that the claimed invention attempts to preempt the use of any algorithm and thus Applicant presumes this is not an issue. However, in view of the proper analysis to be performed under the Guidelines, Applicant submits that the claims in the application do not attempt to monopolize any use of any particular calculation. Instead, Applicants claim a particular use of distributions of pixel properties in a digital image to edit pixels in the digital image as set forth in respective claims.

Indeed the claims in the present application are again analogous to those in the *AT&T* case in which the Court stated:

It is clear from the written description of the ‘184 patent that AT & T is only claiming a process that uses the Boolean principle in order to determine the value of the PIC indicator. The PIC indicator represents information about the call recipient’s PIC, a useful, non-abstract result that facilitates differential billing of long-distance calls made by an IXC’s subscriber. Because the claimed process applies the Boolean principle to produce a useful, concrete, tangible result without pre-empting other uses of the mathematical principle, on its face the claimed process comfortably falls within the scope of Section 101.

172 F.3d at 1358. Similarly in the instant case, no other possible uses for distributions of pixel properties in a digital image are preempted by the claims and the public would be free to use such distributions, e.g., for evaluating or comparing capabilities or qualities different display devices, or for any other purpose. Therefore, Applicant submits that there is no preemption of public use of an abstract idea by the claimed invention.

4) The Office has not established a prima facie case of subject matter ineligibility.

The Office has the burden to establish a prima facie case of subject matter ineligibility based upon the totality of the evidence. If the record as a whole suggests that it is more likely than not that the claimed invention would be considered a practical application of an abstract idea, natural phenomenon, or law of nature, the examiner should not reject the claim. Applicant asserts based upon the argument above, that the Office has failed to establish a prima facie case and that, as demonstrated above, the claims of the present application do in fact meet the practical application requirements set forth in the Guidelines and, more importantly, meet the requirements of Section 101 in conformance with the pronouncements of the Federal Circuit and the Supreme Court. Applicant thus requests withdrawal of the rejection of claims 1-50 pursuant to 35 U.S.C. § 101 in view of both the failure of the Office to address in full the examination Guidelines and the demonstrated conformance of the claims to the patentable subject matter requirements of the statute.

The Office has further rejected claims 26-50 in the Office action pursuant to 35 U.S.C. § 101 as directed to non-statutory subject matter. Claims 26-50 are amended at the examiner's suggestion to change "computer program product" to "computer readable medium" to avoid any concern that the claims as drafted were not directed to statutory subject matter. This amendment is merely one of form over substance as it is Applicants' position that the original claim language means exactly the same the amended claim language. In view of this amendment, Applicant requests withdrawal of the rejection of claims 26-50 pursuant to 35 U.S.C. § 101.

Claim Rejections – 35 U.S.C. § 102

The Office has rejected claim 51 under 35 U.S.C. § 102(e) as being anticipated by Gindele et al., U.S. Publication No. 2003/0179944 ("Gindele"). Without addressing any of the particular functional limitations of claim 51, the examiner argues that all of the structural elements of these claims are present in Gindele. This rejection is based upon a general proposition that apparatus claims must be distinguishable from the prior art in terms of structure rather than function pursuant to M.P.E.P. § 2114. The two primary cases cited as the basis for § 2114, *In re Schreiber* (128 F.3d 1473 (Fed. Cir. 1997)) and *Hewlett-Packard Company, v. Bausch & Lomb, Inc.* (909 F.2d 1464 (Fed. Cir. 1990)), are each factually premised on entirely mechanical apparatus (*Schreiber* concerned a popcorn funnel and *HP* concerned mechanical arms and rollers in a plotting device).

However, the examiner fails to recognize that claim 51 is directed to a computer-related invention and thus examination should be conducted according to the guidelines set forth in M.P.E.P. § 2106 et seq. The Office has recognized that computer-related inventions do not neatly fit within the standard apparatus analysis because computer-related inventions often involve the interdependency of hardware and software components, i.e., functional control or direction of the hardware, to achieve “a useful, concrete, and tangible result.” *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373, (Fed. Cir. 1998).

In particular, section IV(B)(2)(a) of § 2106 in a discussion of statutory product claims points out that “Office personnel must treat each claim as a whole. The mere fact that a hardware element is recited in a claim does not necessarily limit the claim to a specific machine of manufacture.” The section further states, “If a claim defines a useful machine or manufacture by identifying the physical structure of the machine in terms of its hardware or hardware and software combination, it defines a statutory product.” Thus, examination of computer-related inventions necessarily involves consideration of the functional limitations placed on potentially standard hardware by software when determining the patentability of an invention.

Further, Section VI of § 2106 provides that “if the difference between the prior art and the claimed invention is limited to descriptive material stored on or employed by a machine, Office personnel must determine whether the descriptive material is functional descriptive material or nonfunctional descriptive material.” Thus, it is apparent that functional limitations regarding the type of data employed by the structure must be considered when determining the patentability of the claimed computer-related invention.

To this extent, Gindele fails to anticipate the invention claimed in claim 51. The system described in Gindele does not teach or suggest the sampling of two regions in a digital image to determine a first or second distribution of a pixel property, nor does Gindele disclose editing a pixel based upon such first and second distributions. In contrast, Gindele discloses a method for calculating the magnitude of noise affecting digital images from a noise source. Noise is not a pixel property, although it may effect the ultimate output or display of a pixel property. For at least this reason, Applicant submits the examiner has failed to meet the prima facie burden of anticipation through application of the Gindele reference and the rejection of claim 51 should be withdrawn.

Conclusion

Applicant has addressed each of the issues raised in the Office action through amendment to the claims as applicable and otherwise through argument. Applicant believes all claims in the application are thus presently allowable, requests reconsideration of all previously rejected claims, and requests that a notice of allowability be issued in due course.

Respectfully submitted this 2nd day of January 2008.



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